CLAIMS:

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent is:

1. In a computer system having an operating system and a compressed main memory defining a physical memory and a real memory characterized as an amount of main memory as seen by a processor, and including a compressed memory hardware controller device for controlling processor access to said compressed main memory, a device for managing real memory usage comprising:

compressed memory device driver for receiving real memory usage information from said compressed memory hardware controller, said information including a characterization of said real memory usage state:

compression management subsystem for monitoring said memory usage and initiating memory allocation and memory recovery in accordance with said memory usage state, said subsystem including mechanism for adjusting memory usage thresholds for controlling memory state changes,

whereby control of said real memory usage in said computer system is transparent to said operating system.

2. The compressed main memory control device for managing real memory usage as claimed in Claim 1, wherein said memory controller hardware includes an interrupt generator mechanism for generating an interrupt indicating memory usage exceeding a physical real memory usage threshold, said characterization of said real memory usage including a memory state set according to an amount of physical memory used.

3. The compressed main memory control device for managing real memory usage as claimed in Claim 1, wherein said memory controller hardware includes one or more threshold registers

associated with a physical memory usage threshold, said interrupt being generated when a usage threshold value is exceeded.

4. The compressed main memory control device for managing real memory usage as claimed in Claim 1, wherein said device driver further includes mechanism responsive to said interrupt for adjusting said physical memory usage threshold value in accordance with a current memory usage state.

5. The compressed main memory control device for managing real memory usage as claimed in Claim 3, wherein a current memory usage threshold value includes a value associated with a memory state including one of a steady state, warning state and emergency state, wherein said threshold values for each state are governed according to:

steady state threshold < warning threshold < emergency threshold.

6. The compressed main memory control device for managing real memory usage as claimed in Claim 1, wherein said device driver further includes mechanism responsive to said interrupt for broadcasting low physical memory usage interrupts to client applications running on said computer system.

7. The compressed main memory control device for managing real memory usage as claimed in Claim 1, wherein a memory state includes one of a steady state, warning state and emergency state according to said thresholds, said device driver including polling mechanism for polling said memory controller and determine if a threshold should be readjusted downward when in said warning state and emergency state.

8. The compressed main memory control device for managing real memory usage as claimed in Claim 1, wherein each said memory threshold is programmable by a user, said device driver

comprising an interface to said memory controller hardware for enabling a user to set a memory usage threshold.

9. The compressed main memory control device for managing real memory usage as claimed in Claim 5, wherein said compression management subsystem includes mechanism for generating one or more memory eater processes for performing one of: allocating to or releasing said memory from said system.

10. The compressed main memory control device for managing real memory usage as claimed in Claim 9, wherein a number of memory eater processes generated is dependent upon a total real memory amount to recover from said system.

11. The compressed main memory control device for managing real memory usage as claimed in Claim 10, wherein said total real memory amount to recover from said system is equal to a quantity representing a difference between a total amount of real memory as seen by the operating system and a total amount of physical memory in the system.

12. The compressed main memory control device for managing real memory usage as claimed in Claim 9, wherein said compression management subsystem includes mechanism for determining an adjustment amount comprising the amount of physical memory that needs to be allocated or released, said adjustment amount based on a boot compression ratio of said system.

13. The compressed main memory control device for managing real memory usage as claimed in Claim 5, wherein said compression management subsystem includes mechanism for generating one or more blocker processes for association with a single processor operating in said system, each blocker process binding to an associated processor and monopolizing processor time to prevent other applications running in said system from executing when memory usage exceeds said emergency state threshold.

14. The compressed main memory control device for managing real memory usage as claimed in Claim 12, wherein said compression management subsystem includes mechanism for allocating one or more pages of memory at a time.

15. The compressed main memory control device for managing real memory usage as claimed in Claim 1, wherein said real memory usage information includes memory compression statistics.

16. In a computer system having an operating system and a compressed main memory defining a physical memory and a real memory characterized as an amount of main memory as seen by a processor, and including a compressed memory hardware controller device for controlling processor access to said compressed main memory, a method for managing real memory usage comprising the steps of:

receiving real memory usage information from said compressed memory hardware controller, said information including a characterization of said real memory usage state:

monitoring said memory usage and initiating memory allocation and memory recovery in accordance with said memory usage state; and,

adjusting memory usage thresholds for controlling memory state changes,

whereby control of said real memory usage in said computer system is transparent to said operating system.

17. The method for managing real memory usage as claimed in Claim 16, further including the step of generating an interrupts indicating memory usage exceeding a physical real memory usage threshold, said characterization of said real memory usage including a memory state set according to an amount of physical memory used.

18. The method for managing real memory usage as claimed in Claim 16, wherein said memory controller hardware includes one or more threshold registers associated with a physical memory usage threshold, said interrupt being generated when a usage threshold value is exceeded.

19. The method for managing real memory usage as claimed in Claim 16, further including the step of adjusting said physical memory usage threshold value in accordance with a current memory usage state.

20. The method for managing real memory usage as claimed in Claim 19, wherein a current memory usage threshold value includes a value associated with a memory state including one of a steady state, warning state and emergency state, wherein said threshold values for each state are governed according to:

steady state threshold < warning threshold < emergency threshold.

21. The method for managing real memory usage as claimed in Claim 16, further including the step of broadcasting low physical memory usage interrupts to client applications running on said computer system.

22. The method for managing real memory usage as claimed in Claim 16, wherein a memory state includes one of a steady state, warning state and emergency state according to said thresholds, said method further including polling said memory controller hardware to determine if a threshold should be readjusted downward when in said warning state and emergency state.

23. The method for managing real memory usage as claimed in Claim 16, further including the step of enabling a user to set a memory usage threshold.

24. The method for managing real memory usage as claimed in Claim 20, further including the step of generating one or more memory eater processes for performing one of: allocating to or releasing said memory from said system.

25. The method for managing real memory usage as claimed in Claim 24, further including the step of determining a number of memory eater processes to be generated based upon a total real memory amount to recover from said system.

26. The method for managing real memory usage as claimed in Claim 25, further including the step of determining an adjustment amount comprising the amount of physical memory that needs to be allocated or released, said adjustment amount based on a boot compression ratio of said system.

27. The method for managing real memory usage as claimed in Claim 24, further including the step of generating one or more blocker processes for association with a single processor operating in said system, each blocker process binding to an associated processor and monopolizing processor time to prevent other applications running in said system from executing when memory usage exceeds said emergency state threshold.

28. The method for managing real memory usage as claimed in Claim 16, further including the step of allocating one or more pages of memory at a time.